1912 **CIRCUITRY(Heterodyne and Superheterodyne) (see figure 5.2)** **H M Fessenden and E H Armstrong (USA)**

Professor Fessenden, in his search for an improved receiver, invented the heterodyne system in 1912. Previous receivers had merely acted as valves, detecting by turning a direct current on and off in amounts proportional to the received signal. In contrast, the heterodyne system operated through the joint action of the received signal and a local wave generated at the receiving station. Combination of these two alternating currents resulted in an audio beat-note, the difference frequency between the two waves. Although Fessenden's local oscillator was an arc source, very bulky and troublesome, it was nevertheless the forerunner of superheterodyne and single-banded reception.

The next advance in double-detection technique involved amplification of the beat-note or intermediate frequency. Several parallel developments took place in the United States and in Europe. It is difficult to name an inventor since the superheterodyne system as a basic idea seemed to appear from several sources at about the same time. The works of J H Hammon, A Meissner, Lucian Levy, E F Alexanderson, and E H Armstrong stand out. Armstrong fully appreciated the problem and obtained a patent in 1920 that was of major importance in the practical application of the superheterodyne system.

SOURCE: 'Radio receivers—past and present' by C Buff *Proc. IRE* p 887 (May 1967)

SEE ALSO: 'The superheterodyne—its origin, development and some recent improvements' by E H Armstrong *Proc. IRE* vol 12, p 549 (October 1924)